

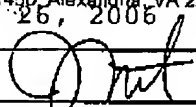
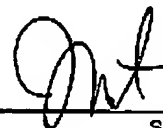
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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 2002 P 16328 US	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on <u>June 26, 2006</u> Signature <u></u> Typed or printed name <u>Ira S. Matsil</u>		Application Number 10/788,805 Filed February 27, 2004 First Named Inventor Lindstedt Art Unit 2811 Examiner Hung K. Vu	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p>			
I am the <input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) <input checked="" type="checkbox"/> attorney or agent of record. <u>35,272</u> Registration number _____ <input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____		<div style="text-align: center;">  Signature Ira S. Matsil Typed or printed name 972-732-1001 Telephone number June 26, 2006 Date </div>	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.			
<input checked="" type="checkbox"/> Total of <u>1</u> forms are submitted.			

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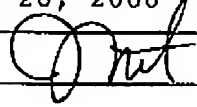
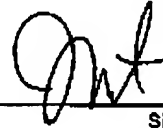
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Lindstedt	Docket No.:	2002 P 16328 US
Serial No.:	10/788,805	Art Unit:	2811
Filed:	February 27, 2004	Examiner:	Vu, Hung K.
For:	Semiconductor Chip Arrangement and a Method for Its Production		

**Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Dear Sir:

Claims 1-7, 9-13 and 20-27 are pending. In view of the limited nature of the pre-appeal brief review and the page limit on this document, Applicant will limit the subject matter of this paper to the review of claims 5, 7 and 24. Claim 5 depends from claim 1, claim 7 is independent and claim 24 depends from claim 20.¹ Applicant reserves the right to supplement these arguments and discuss additional claims in the full appeal brief, if necessary.

The three claims at issue here were each been finally rejected as being obvious over Malba (U.S. Patent No. 5,834,162, hereinafter "Malba") in view of Glenn (U.S. Patent No. 6,518,659 B1, hereinafter "Glenn"). For each of claims 5, 7 and 24, Applicant respectfully submits that it would not be obvious to modify the unpackaged semiconductor chip of Malba based upon features of packaged housings that are described in Glenn.

¹ Applicant filed an amendment under 37 C.F.R. § 1.116 adding the limitations of claims 5 and 24 to independent claims 1 and 20. These amendments were not entered because they allegedly raise new issues with regard to the remaining claims, which separately depend from claims 1 or 20. These new issues will not exist if claims 5 and 24 are found allowable and, as a result, Applicant will pursue appeal on these claims now.

1. Facts

- Claims 5, 7 and 24 all disclose arrangements of semiconductor substrates that comprise unpackaged semiconductor chips.
- Claims 5 and 24 require a contact area arranged on a side surface of the substrate, where the contact area extends from a first main surface to a second main surface of the substrate.
- Claim 7 also requires a contact arranged on a side surface of the substrate. In the arrangement of claim 7, first and second of these substrates are arranged alongside each other and a third substrate is arranged over the second substrate. *See e.g.*, the arrangement of Fig. 3b.
- In the arrangements of all three claims at issue, an electrical contact is produced between the contact area of one semiconductor substrate and the contact area of another semiconductor substrate.
- Malba teaches an unpackaged semiconductor chip with a contact area 17 arranged on a sidewall 12 of a substrate 10. Malba does not teach that the contact area 17 extends from the first main surface to the second main surface and does not teach the arrangement of claim 7. Further, Malba teaches a stack of semiconductor chips but does not teach an electrical connection between contact areas 17 of various ones of the chips.
- Glenn teaches packages 10 that include metal leads 21 alongside the outside of the package and are formed from the leadframe used in the packaging process. These leads 21 extend from a first main surface of the package to a second main surface of the package. *See Fig. 1.* Fig. 6D shows an arrangement where first and second packages are alongside each other and a third package is arranged over the second package. The packages are electrically interconnected.

2. Issue

The issue in the application is whether or not it would have been obvious to one of ordinary skill in the art at the time of invention to modify the unpackaged semiconductor chip arrangement taught by Malba with the package leads taught by Glenn.

3. Discussion

The contents of the two cited references do not provide any suggestion for combining their technical teaching since Glenn refers to a packaged semiconductor substrate surrounded by a housing and Malba refers to an unpackaged semiconductor substrate. It is not apparent how one of ordinary skill in the art would apply the electrical contacts 21 of Glenn to the unpackaged chip of Malba. In Glenn, the contacts are formed during the packaging process. These contacts surround a sidewall of the housing, which is much larger and higher than an unpackaged semiconductor substrate. It would not be obvious modify an unpackaged semiconductor substrate or chip having much smaller dimensions, in particular in vertical direction perpendicular to the semiconductor main surfaces, with these teachings.

The Examiner and Applicant both agree that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In other words, the legal principle is not at issue here, only its application to the facts of this case.

In the advisory action, the Examiner argues that one of be motivated to form the structure of Malba as modified by Glenn "in order to easily add more semiconductor substrate/chip to increase the circuit density without increasing the mounting area on a printed circuit board." Unfortunately,

the combination of references provides no teaching as to how this goal could be achieved. The present invention is the only teaching of interconnected, stacked, unpackaged semiconductor substrates and, it goes without saying, Applicant's own teachings cannot provide the motivation for combining the references.

Applicant respectfully submits that one of ordinary skill in the art would not be able to use the leads of Glenn with the unpackaged semiconductor chips of Malba. As taught by Glenn, the leads 21 are portions of a lead frame 61. Col. 11, line 38. *See also*, Fig. 7, which shows an array of four leadframes. The leadframe 61 is encapsulated with molding compound that does not cover portions 24 of the leads 21. Col. 11, line 23. After encapsulation, the dambar portion of the leadframe is removed from the package, which includes lead 21. Col. 11, line 50. The leads 21 may be dipped in solder or plated with solder for electrical interconnection to a printed circuit board or to abutting leads of other packages. Col. 11, line 54.

Applicant respectfully submits that once this packaging process is applied to an unpackaged chip, the chip is no longer unpackaged. Glenn provides no teaching or suggestion that leads 21 could be formed by any method other than by packaging the integrated circuit 28. Once the integrated circuit is packaged, it is no longer within the scope of the claim. As a result, the references cannot be combined.

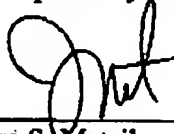
Even if one could form the leads 21 on an unpackaged chip, doing so would be detrimental to the Malba configuration. Malba teaches contacts 17 along sidewalls 12 of an integrated circuit. "With the I/O pads routed onto the sidewall, they are readily available for attachment to a desired location." Col. 2, line 63. Leads along the sidewalls, however, would cover these I/O pads so that they are no longer readily available for attachment. In other words, the configuration of leads taught

by Glenn is incompatible with Malba's chip configuration. This fact provides another reason why combination of the two references is not obvious.

Taking it a step further, if Malba did desire to interconnect ones of the chips in the stack (which he doesn't) and could include the sidewall leads taught by Glenn (which he can't), then the side contacts 17 would be rendered useless. Since Glenn already teaches an unpackaged chip and a goal of coupling that chip to another chip in the stack, Malba would not add any information to the analysis. The issue then is whether it would be obvious to modify Glenn to include only the chips 28 and the leads 21 without the package body 11.

Glenn explicitly states the Examiner's motivating goal of increasing the circuit density without increasing the mounting area on a printed circuit board. "Stacking the packages allows an increase in the density of packages on a printed circuit board without a corresponding increase in the area of the printed circuit board consumed thereby." Col. 1, line 39. This leads to a very simply question: If it was obvious to apply Glenn's leads 21 to the unpackaged chip 28, why didn't Glenn do so? There can only be one answer. This modification was not obvious and for this reason, along with the other reasons provided herein, claims 5, 7 and 24 are allowable.

Respectfully submitted,



Ira S. Matsil
Attorney for Applicant
Reg. No. 35,272

6/26/06

Date